

## PATENT SPECIFICATION (11)

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(19)



## (54) MACHINE FOR CLEANING CARPETS AND THE LIKE

(71) We, SYD W. COLLIER CO. LTD., of 2001 Wharton Way, Mississauga, Ontario, Canada, a corporation organised under the laws of Canada, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

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*Field of the Invention*

This invention relates to a novel rug and carpet cleaning machine for both domestic and commercial application.

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*Background of the Invention*

With the increased use of carpeting on floors both in homes and in offices, the problem of keeping the carpets and rugs clean efficiently and inexpensively has been greatly accentuated. In the past, there have been a variety of methods used to clean carpets and rugs which heretofore have proven to be unsatisfactory. Some of these unsatisfactory methods such as using a shampoo and scrubbing were time consuming since it required a number of steps before the cleaning operation was completed. It also left the cleaning solution in the rug to dry which is detrimental to the life of the rug. Other methods were unsatisfactory when used on thick or shag carpets since the dirt at the bottom of the pile would remain essentially untouched while the dirt at the top was merely washed further down into the pile. Further, these old methods left the rugs and carpets with a shabby appearance and reduced their life expectancy due to the moisture and dirt being left in the pile. With the increased use of rugs and carpets, the need for a better cleaning method has been greatly increased, which need has not been satisfactorily met prior to the present invention.

The present invention provides a machine for cleaning rugs and the like comprising means for applying cleaning fluid to a rug, means for brushing said rug immediately after application of said cleaning fluid and

means for applying vacuum to said rug immediately after said brushing, said means for brushing comprising a rotary brush driven by a motor, said rotary brush being vertically adjustable on the machine in accordance with the thickness of said rug while said means for applying cleaning fluid is not vertically adjustable on the machine, said motor and brush being in spaced relation, and the distance between said motor and said brush being constant at all times, irrespective of brush adjustment.

Preferably, said means for applying cleaning fluid, means for brushing and means for applying vacuum act upon substantially the same width of rug when the machine is used to clean a rug.

*Brief Description of the Drawings*

Figure 1 is a perspective view of the cleaning machine with part of the outer casing cut away to show the brush and pulley arrangement.

Figure 2 is a bottom perspective view of the cleaning machine showing the relationship between the vacuum nozzle, the reel-type brush and the solution-applying tube and nozzle.

Figure 3 is a view taken along the line 3—3 of Figure 2.

*Detailed Description of the Drawings*

Referring now to the drawings, there is shown a cleaning head or machine generally designated at 10 having an outer casing 11, a handle 12 pivotally connected at 13 at the end 29 of machine 10. Also adjacent end 29 of the machine 10 are wheels 14 for easier manoeuvring and handling of the machine to position the machine for the cleaning operation. At the opposite end 15 of machine 10 is located a narrow elongated vacuum nozzle 16 running the width of the machine. As can be seen from Figure 3, the nozzle extends below the wheels 14 and brush 21 and is shaped to form a skid on which the free end of the head rides to ensure positive pile penetrating contact with the carpet to maximize the effect of the vacuum.

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The nozzle has two parallel spaced apart walls 15<sup>1</sup> and 17 which are joined on three sides to form a chamber and the fourth side which is open forms a narrow elongated opening 18 adjacent the rug. Fitted over opening 18 is a channel shaped nozzle shoe 30 with opening 31 matching opening 18. Shoe 30 is held in place by bolts 32 and is sealed by a silicone sealant to prevent leakage therearound so that the full effect of the vacuum is felt at opening 18. Shoe 30 aids in the smooth passage of the nozzle over the carpet surface as it presses into the pile. Centrally located on the closed side opposite opening 18 is a hose 19 which is in communication with nozzle 16 through which the spent cleaning fluid and dirt is vacuumed into a recovery tank (not shown).

Located in the cavity of outer casing 11 is a platform 20 which is parallel to and spaced apart from the top of outer casing 11. Located on platform 20 is a reel-type brush 21, a motor 22 and belt drive 23 connecting motor 22 and reel-type brush 21.

Platform 20 is pivotally mounted on outer casing 11 by means of pins 26 and the angle at which the platform is positioned with respect to the carpet is determined by adjusting knob 27 which adjusts the tilt of the platform 20 and locks it in place. Thus it can be seen that the reel-type brush 21 may be adjusted to accommodate different thicknesses of carpets and since the reel-type brush 21 and motor 22 are fixed on platform 20, belt 23 will remain taut regardless of the height at which brush 21 is set with respect to the carpet. Platform 20 has an elongate rectangular opening 33 to accommodate cylindrical tube 24 which is mounted on the underside of casing 11. Also located on platform 20 and at one edge of opening 33 is a splash guard 34 which protects the motor 22 from the sprays from outlet nozzles 25 and the brushing action.

Solution-applying cylindrical tube 24 is fixedly mounted by brackets 35 on the under side of outer casing 11 and has located thereon spaced apart outlet nozzles 25, each adapted to eject a fine high velocity pile penetrating spray. In mounting the tube 24, brackets 35 are first secured to the outer casing, then tube 24 is adjusted until the sprays from the nozzles form a predetermined pattern, at which time adjusting bolts 36 are tightened. The ideal position is when the spray tangentially contacts the periphery of the brush when the brush is in its lowermost position 37. The spray pattern is such that no liquid is applied beyond the limits of the brush and vacuum nozzle to ensure that no streaking takes place due to the solution being left in the rug. Solution-applying tube 24 is connected to a pressurized source of cleaning solution by means of inlet tubes 28. As can be seen from

Figure 2, and, more specifically, Figure 3, the outlet nozzles are arranged to direct their jet spray in diverging directions so that the jets from adjacent nozzles do not interfere with each other. If interference is allowed to take place, the diverging streams will collide with each other, thereby interrupting their velocity and creating excessively wet rug surface areas instead of penetrating uniformly deep into the carpet pile. Again, this would tend to leave streaks in the rug.

To operate the machine 10, the operators pulls the machine by means of handle 12 across the surface to be cleaned. To maximize the vacuum pressure, the operator lifts the machine slightly to direct the weight of the machine on the vacuum nozzle which gives a more positive contact between the vacuum nozzle and the carpet. In order to reduce snagging between the sharp edges of the vacuum nozzle and the carpet piles, shoe 30 is fitted over the vacuum nozzle. Located on handle 12 is a trigger mechanism (not shown in the drawings) which controls the flow of pressurized cleaning solution from the storage tank (also not shown) to outlet nozzles 25. Immediately after the application of the hot cleaning solution and as the machine is pulled further along the path, the reel-type brush 21, which is powered by means of motor 22 and drive belt 23, brushes the carpet surface to aid in the extraction of the dirt which is caught in the pile. This brushing action also tends to massage and revitalize the carpet pile to give it a fresh look. As machine 10 is further pulled along the surface being cleaned, vacuum nozzle 16, which is in communication with a vacuum source and recovery tank through nozzle 19, draws up the spent cleaning fluid and dirt. Thus, in one sweep of the cleaning machine the carpet is washed, brushed and vacuumed dry.

While the embodiment of the invention has been particularly described, it will be understood that variations may be made, as will be apparent to those skilled in the art, without departing from the scope of the appended claims.

#### WHAT WE CLAIM IS:—

1. A machine for cleaning rugs and the like comprising means for applying cleaning fluid to a rug, means for brushing said rug immediately after application of said cleaning fluid and means for applying vacuum to said rug immediately after said brushing, said means for brushing comprising a rotary brush driven by a motor, said rotary brush being vertically adjustable on the machine in accordance with the thickness of said rug while said means for applying cleaning fluid is not vertically adjustable on the machine, said motor and brush being in spaced relation, and the distance between said motor

and said brush being constant at all times, irrespective of brush adjustment.

2. A machine as claimed in Claim 1 wherein said means for applying cleaning fluid, means for brushing and means for applying vacuum act upon substantially the same width of rug when the machine is used to clean a rug.

3. A machine as claimed in Claim 1 wherein said means for applying cleaning fluid comprises a horizontal elongated cylindrical tube, having at least one inlet means in communication with a pressurized cleaning fluid source and a plurality of axially spaced apart outlet means along the side of said tube adjacent said rug through which said cleaning fluid is applied to said rug.

4. A machine as claimed in Claim 3 wherein said outlet means are arranged such that adjoining outlet means provided diverging jet sprays such that the cleaning fluid jet spray from one outlet means does not interfere with the cleaning fluid jet spray from another outlet means while the cleaning fluid is being applied to said rug in a predetermined pattern.

5. A machine as claimed in Claim 1 wherein said brush and said motor are mounted on an adjustable platform, and wherein are provided means for adjusting said platform and brush in relation to said rug and means for securing such platform in the adjusted position.

6. A machine as claimed in Claim 5 wherein said platform, is rotatable about a horizontal axis and means is provided for rotating said platform a limited distance about said horizontal axis.

7. A machine as claimed in Claim 1 wherein said means for applying vacuum comprises an intake nozzle having an elongated rectangular intake opening for positioning adjacent said rug, said nozzle being in communication with a vacuum source.

8. A machine as claimed in Claim 7 wherein said intake nozzle has means attached thereto for allowing smoother passage of said nozzle over said rug surface.

9. A machine for cleaning rugs and the like comprising a horizontal elongated cylindrical tube for applying cleaning fluid to a rug, a reel-type brush parallel to and spaced apart from said cylindrical tube and driven by a drive belt and a motor for brushing said rug immediately after application of said cleaning fluid and an intake nozzle in communication with a vacuum source for applying vacuum to said rug immediately

after said brushing, said horizontal elongated cylindrical tube having at least one inlet means in communication with a pressurized cleaning fluid source and a plurality of axially spaced apart outlet means along the side of said tube adjacent said rug, said motor and said brush being mounted on an adjustable platform for vertically adjusting said brush on the machine in accordance with the thickness of said rug while maintaining the distance between said brush and said motor constant at all times, the tube not being vertically adjustable on the machine, said intake nozzle having an elongated rectangular intake opening parallel to and spaced apart from said brush and for positioning adjacent said rug, said intake nozzle being in communication with a vacuum source.

10. A machine as claimed in Claim 9, wherein said outlet means are arranged such that adjoining outlet means provide diverging jet sprays such that the cleaning fluid jet spray from one outlet means does not interfere with the cleaning fluid jet spray from another outlet means while the cleaning fluid is being applied to said rug in a predetermined pattern.

11. A machine as claimed in Claim 9 wherein said platform is rotatable about a horizontal axis, means for rotating said platform a limited distance about said horizontal axis, and means for securing said platform in the adjusted position.

12. A machine as claimed in Claim 9 wherein said tube for applying cleaning fluid, said brush and said intake nozzle act upon substantially the same width of rug when the machine is used to clean a rug.

13. A machine as claimed in Claim 9 wherein said intake nozzle has means attached thereto for allowing smoother passage of said nozzle over said rug surface.

14. A machine for cleaning rugs and the like substantially as herein described with reference to and as shown in the accompanying drawings.

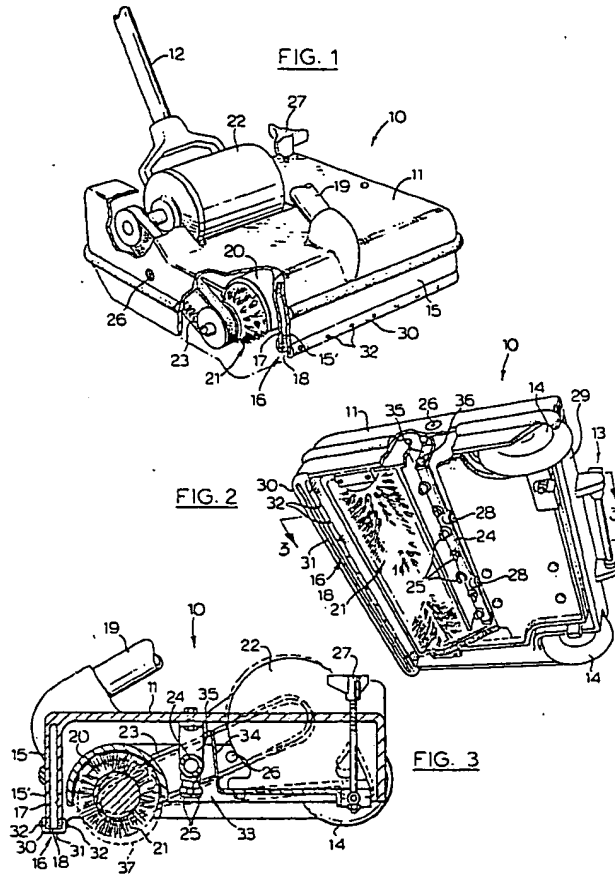
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COMPLETE SPECIFICATION

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